

Table 1 Chemical composition of E911 (wt.%, Fe balance)

C	Si	Mn	P	S	Cr	Mo	Ni	V	Al	Nb	W	N
0.115	0.19	0.35	0.007	0.003	9.10	1.00	0.22	0.23	0.006	0.069	0.98	0.069

Table 2 X-ray diffraction data of HfC compared with the d values found from the electron diffraction patterns obtained here.

Data from x-ray diffraction card			Matched	Error
d/Å	I/I ₁	hk1	d/Å	(%)
2.68	100	111		
2.321	90	200	2.33	0.39
1.641	70	220	1.645	0.25
1.399	80	311	1.396	-0.22
1.340	30	222	1.32	-1.5
1.160	10	400	1.17	0.87
1.065	50	331	1.06	-0.47
1.038	50	420		
0.9473	40	422	0.960	1.4
0.8932	50	333,511		
0.8204	30	440		
0.7845	80	531		
0.7735	70	600		

Table 3 X-ray diffraction data of (Cr,Fe)₂N_{1-x} compared with the d values found from the electron diffraction patterns obtained here.

Data from x-ray diffraction card			Matched	Error
d/Å	I/I ₁	hk1	d/Å	(%)
2.399	16	110	2.3572	-1.8
2.233	40	002	2.174	-2.7
2.114	100	111	2.1191	0.25
1.634	35	112	1.639	0.31
1.387	25	300	1.399	0.87
1.266	30	113	1.264	-0.16
1.178	20	302	1.174	-0.34
1.159	16	221	1.174	1.3
1.115	10	004	1.081	-3.1
1.054	8	222	1.081	2.6
1.013	8	303	1.002	-1.1
0.9342	35	223	0.9336	-0.07

Table 4 X-ray diffraction data of Z-phase (CrNbN) compared with the d values found from the electron diffraction patterns obtained here.

Data from x-ray diffraction card			Matched d/Å	Error (%)
d/Å	I/I ₁	hk1		
7.380	1	001		
3.650	3	002		
2.803	8	101	2.779	-0.9
2.461	25	003		
2.344	55	102	2.357	0.6
2.144	40	110	2.152	0.4
2.051	1	111	2.098	2.3
1.913	18	103	1.899	-0.8
1.853	3	112	1.890	2.0
1.847	15	004	1.840	-0.4
1.618	40	113	1.639	1.3
1.578	10	104	1.566	-0.8
1.518	35	200	1.554	2.4
1.491	1	201		
1.478	18	005		
1.403	1	202	1.399	-0.4
1.400	30	114	1.399	-0.1
1.336	17	211	1.399	4.7
1.329	55	105		
1.292	40	203		
1.275	100	212		
1.231	7	006		
1.218	65	115	1.174	-3.7
1.189	40	213	1.174	-1.3
1.175	50	204	1.174	-0.1

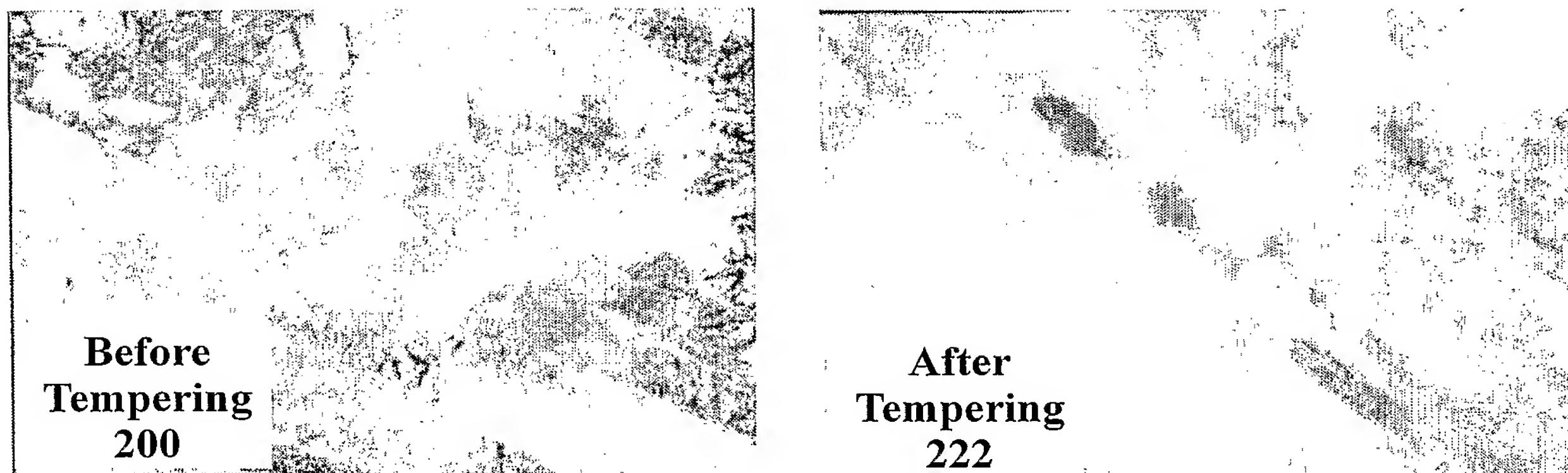


Fig. 1

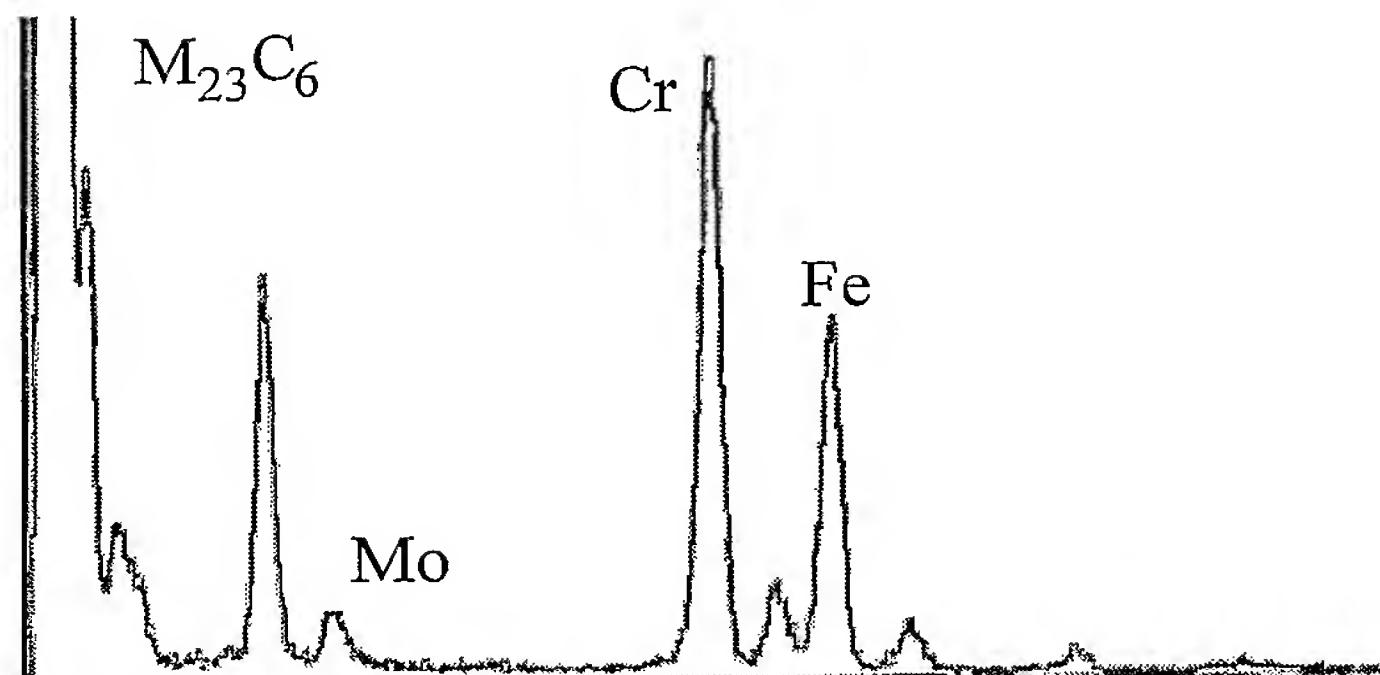


Fig. 2

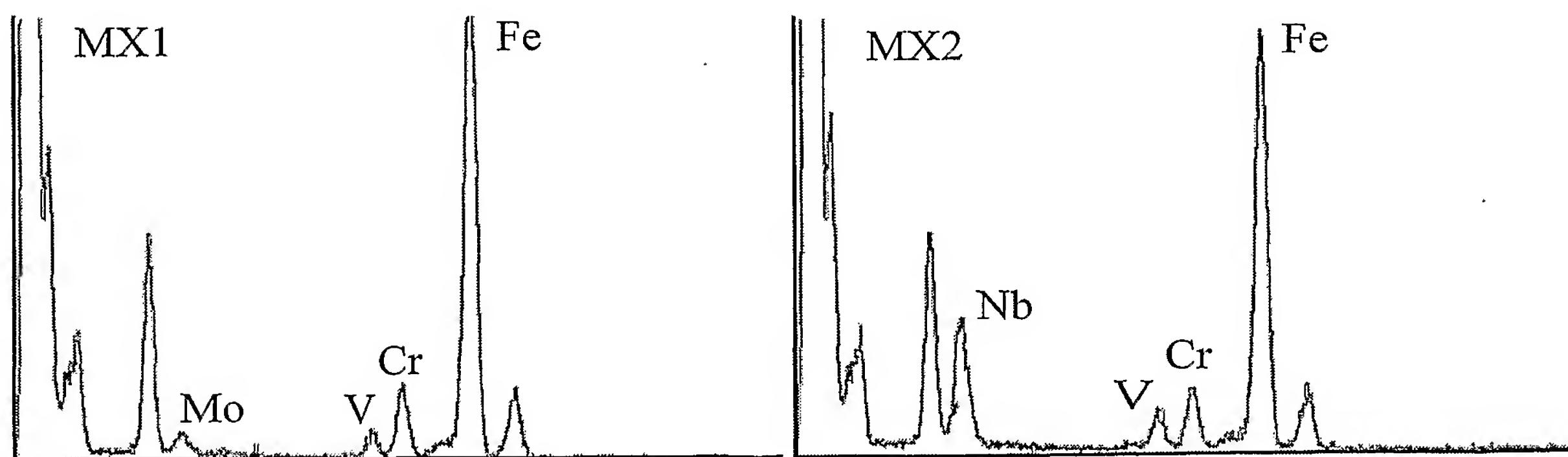


Fig. 3



Fig. 4

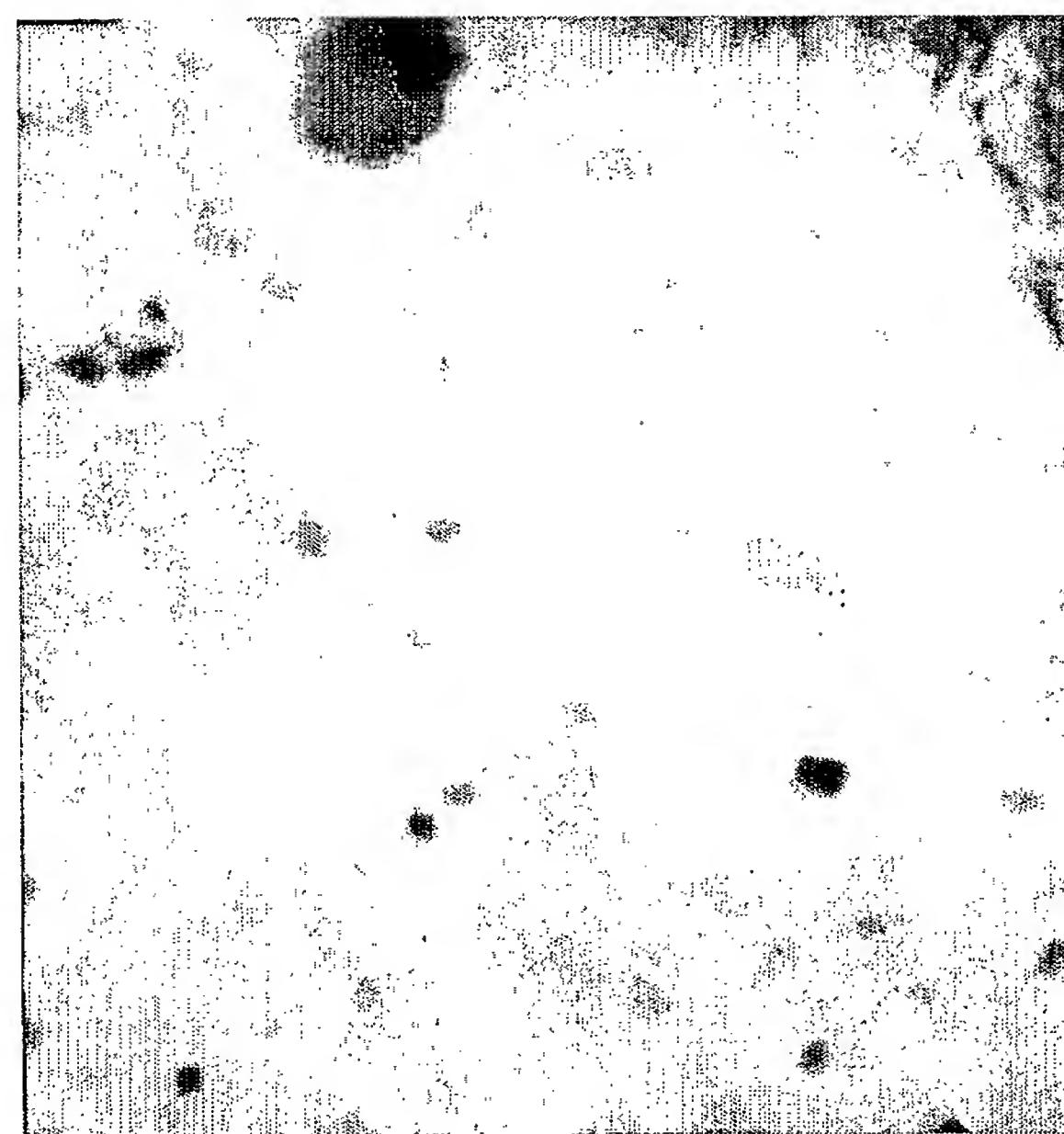


Fig. 5

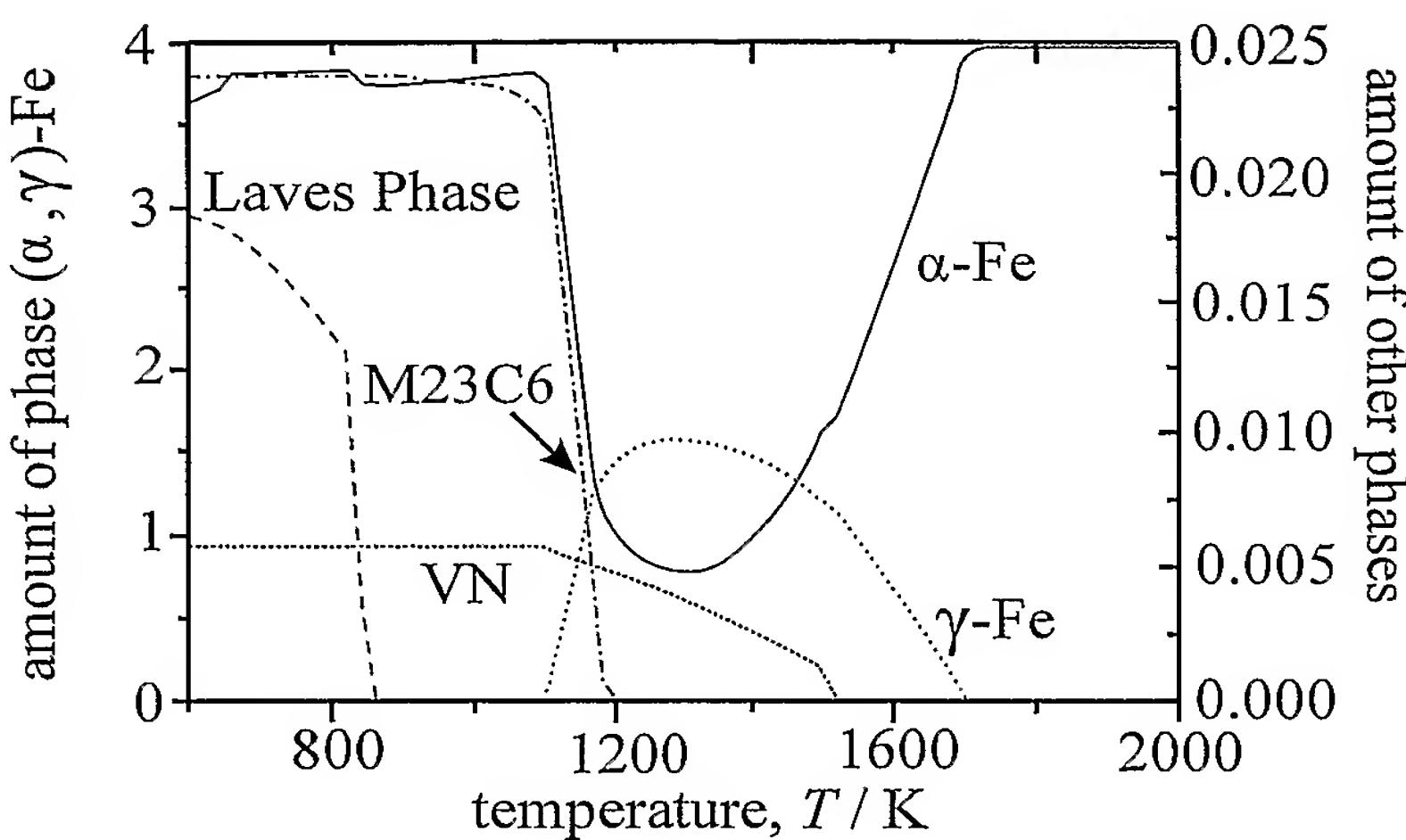


Fig. 6a

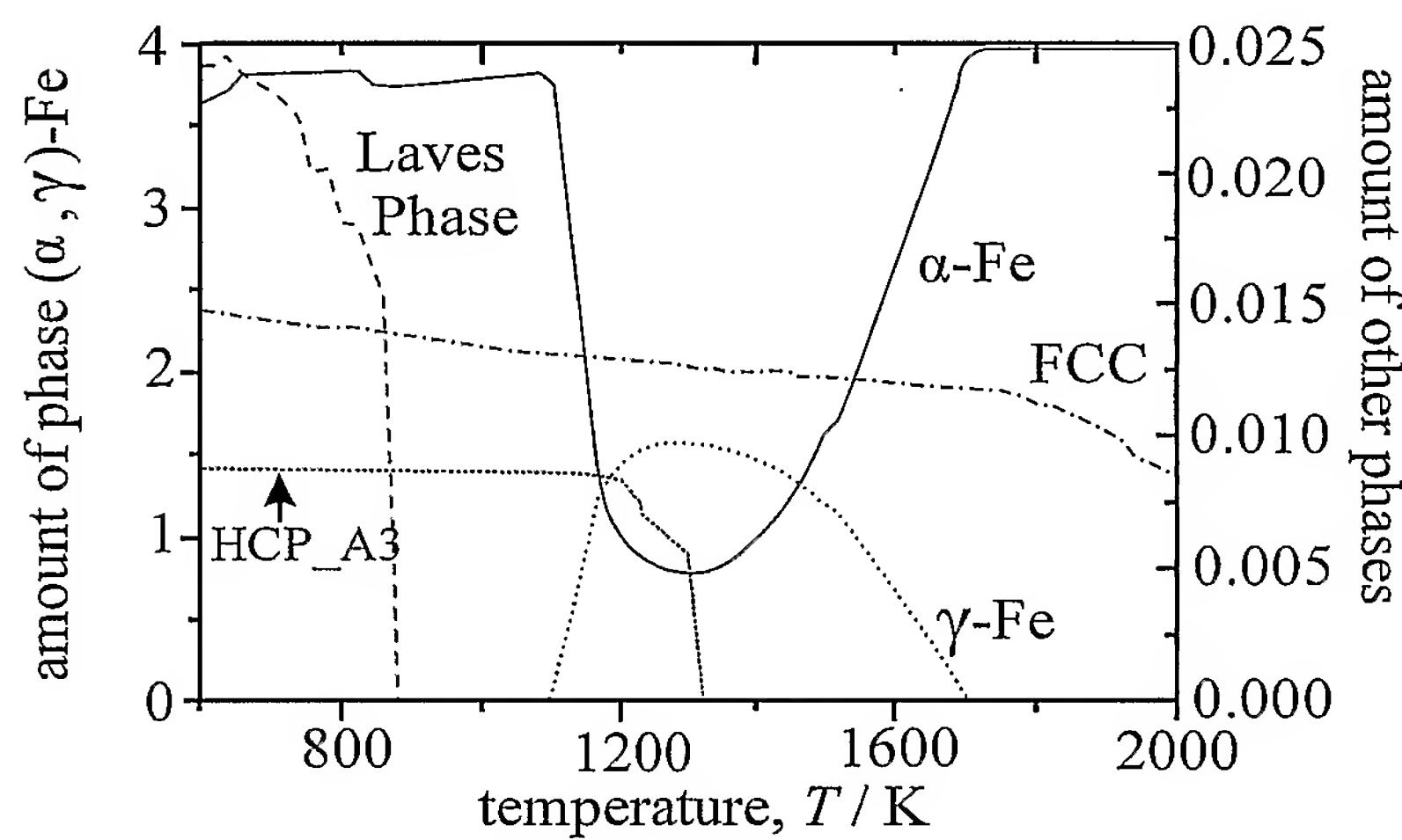


Fig. 6b

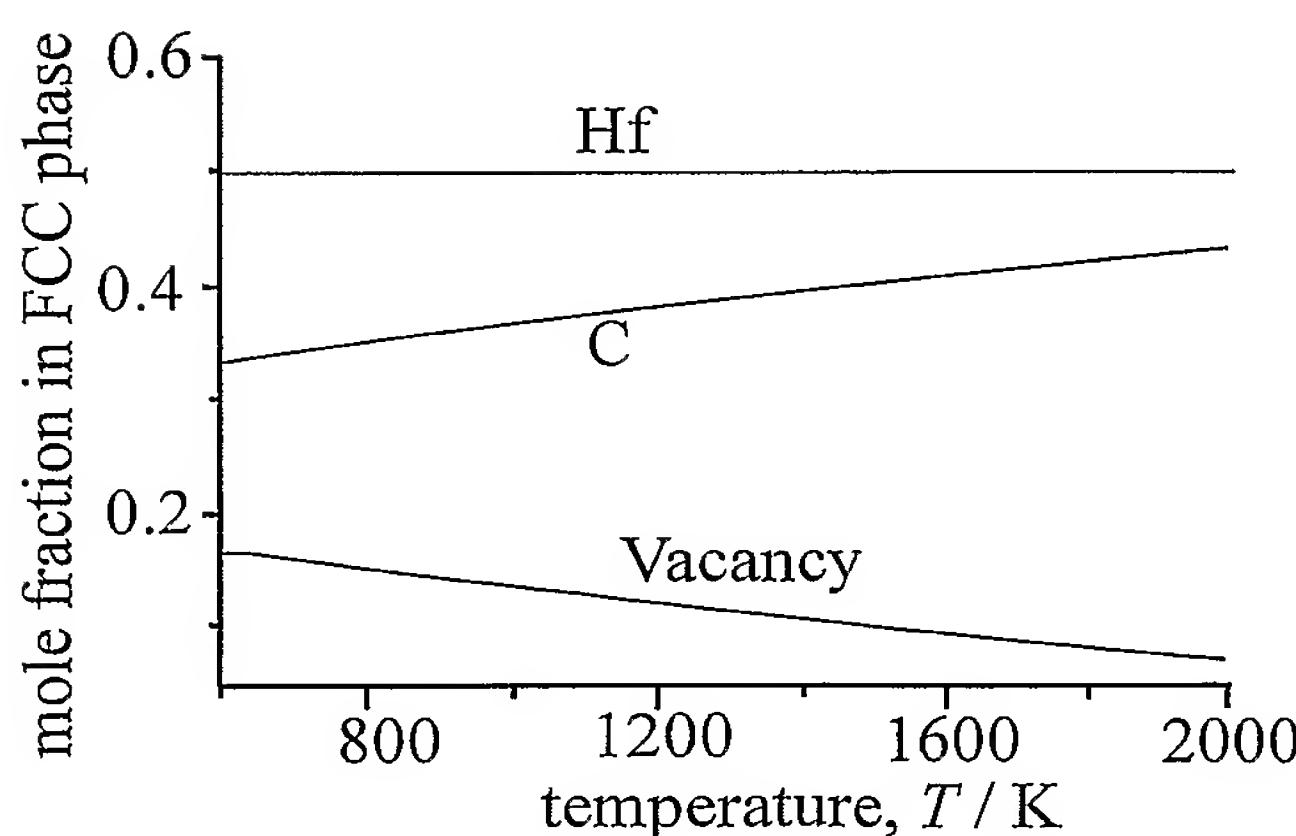


Fig. 7a

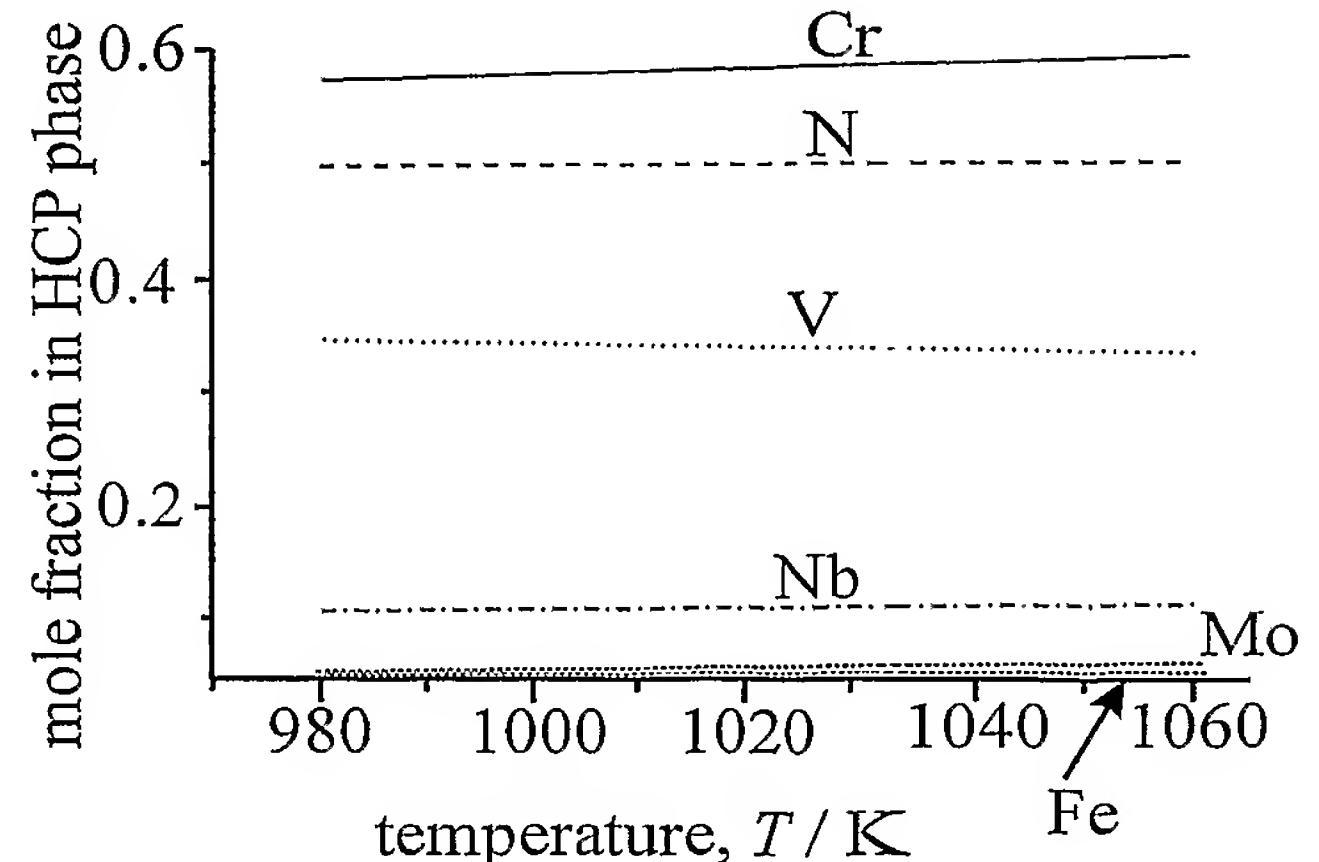


Fig. 7b

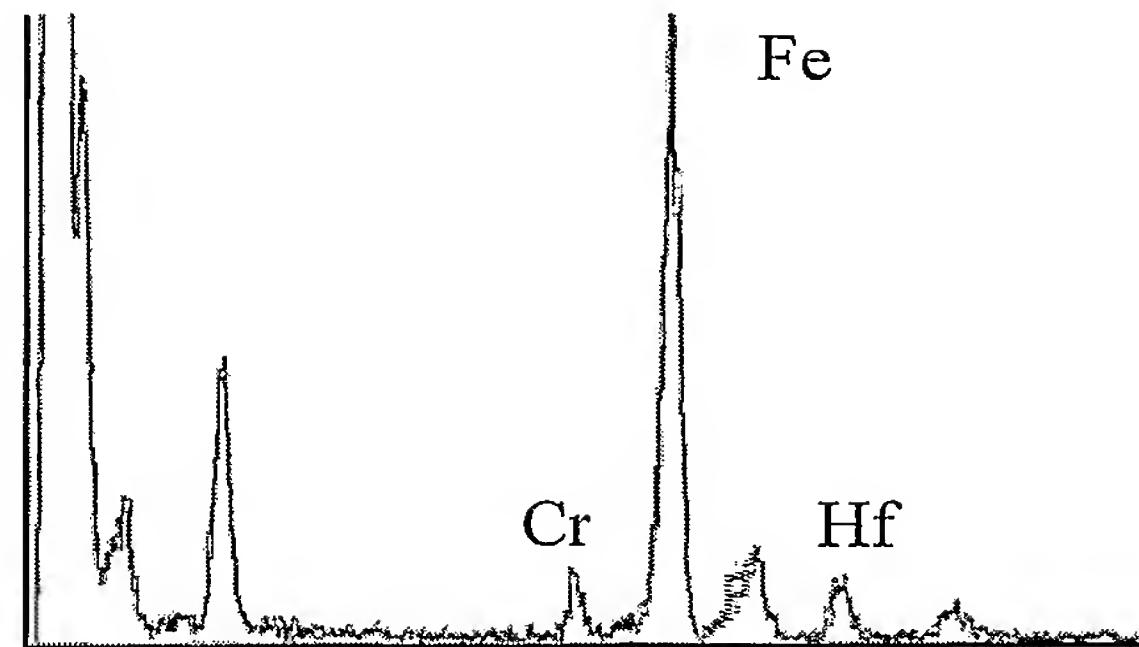


Fig. 8

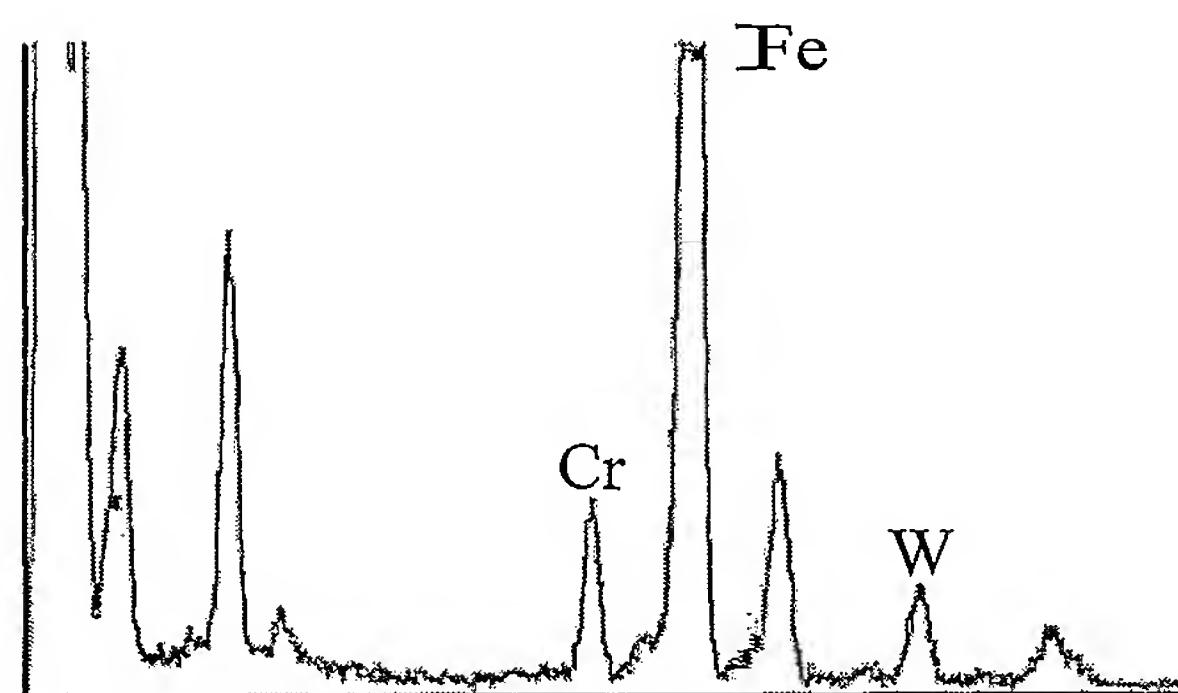


Fig. 9

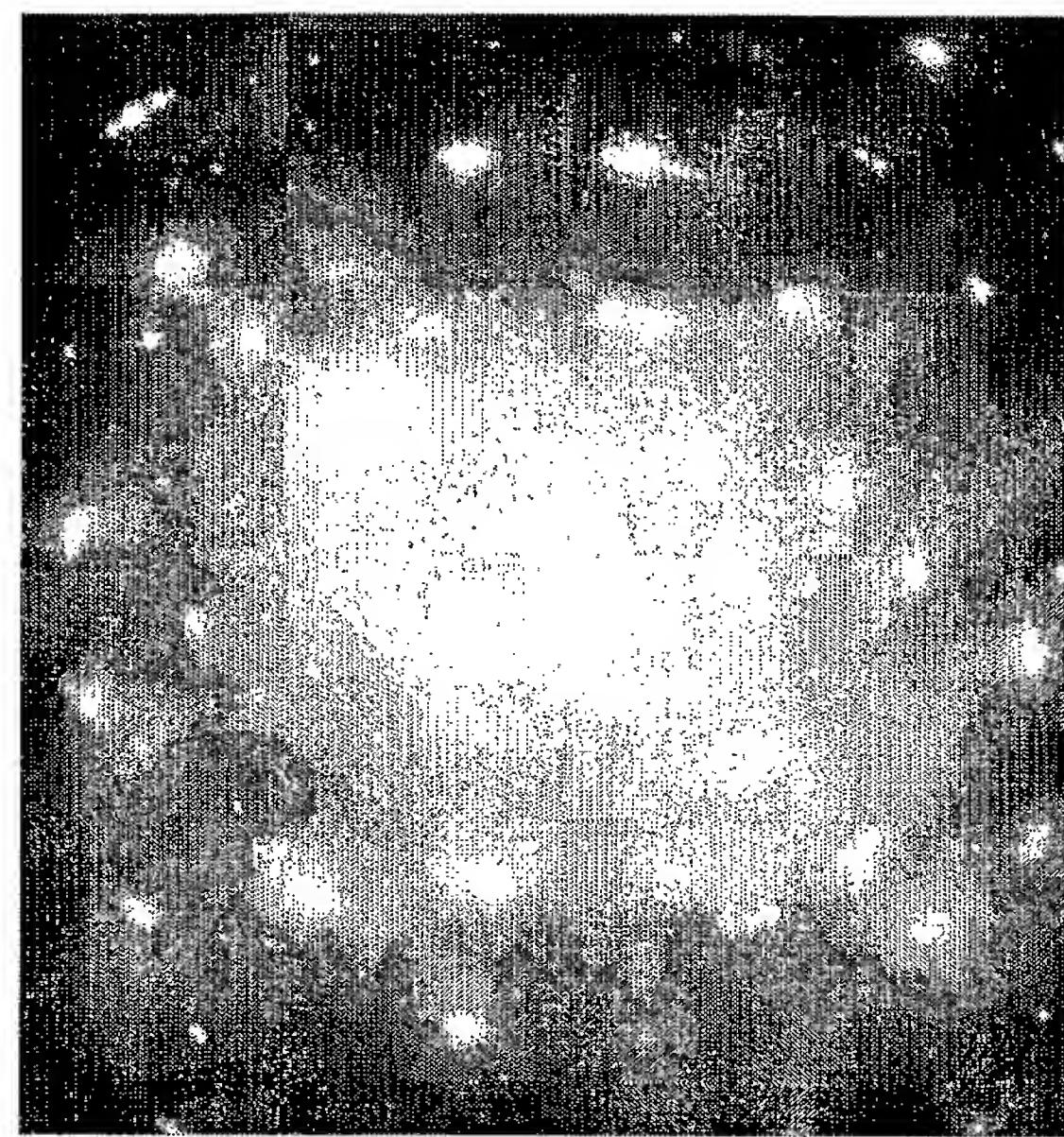


Fig. 10

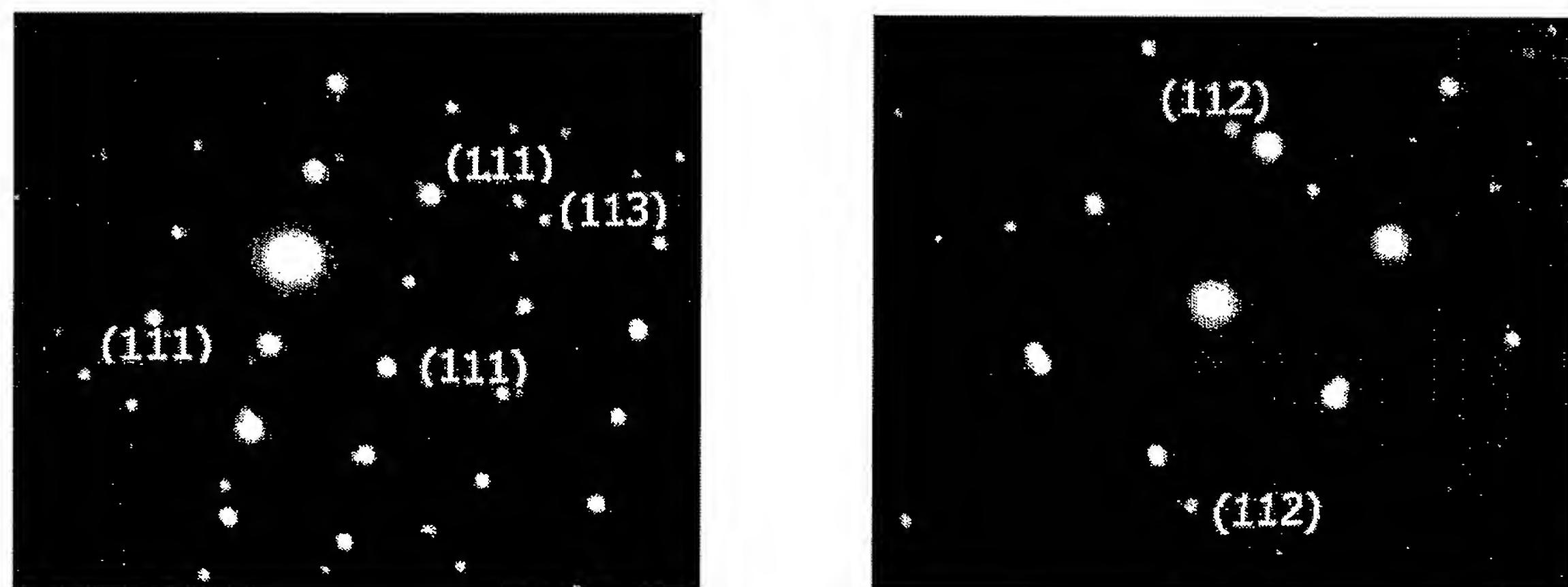


Fig. 11

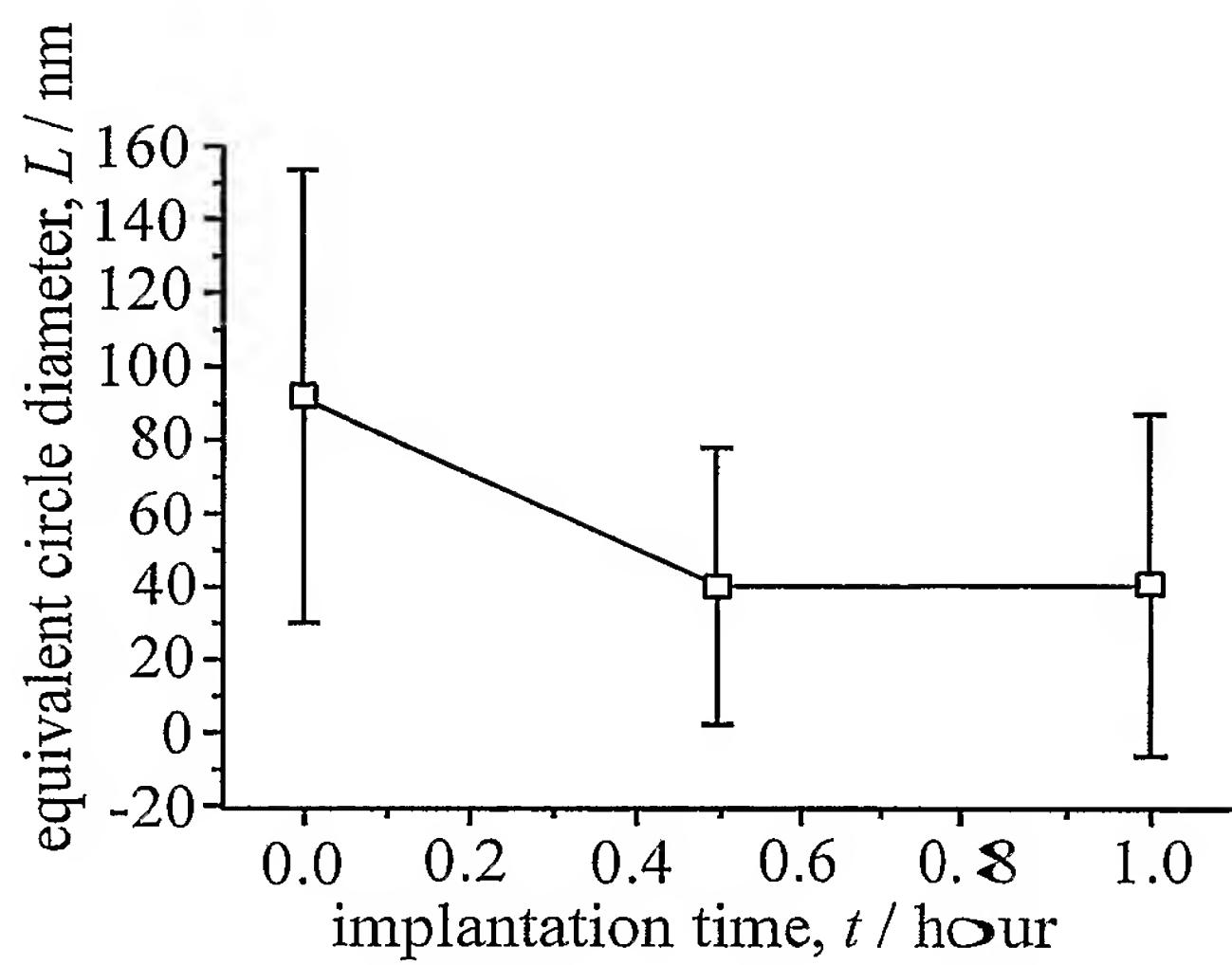


Fig. 12

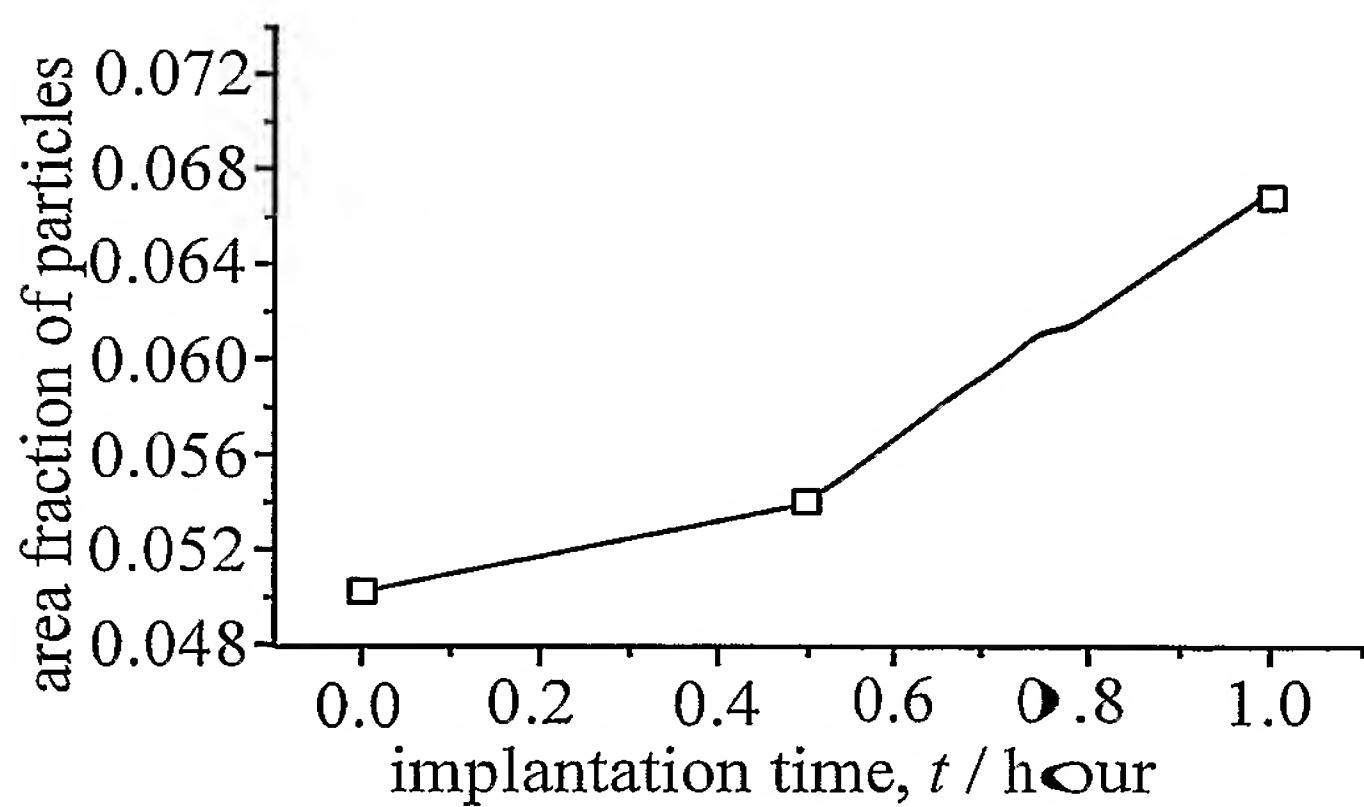


Fig. 13

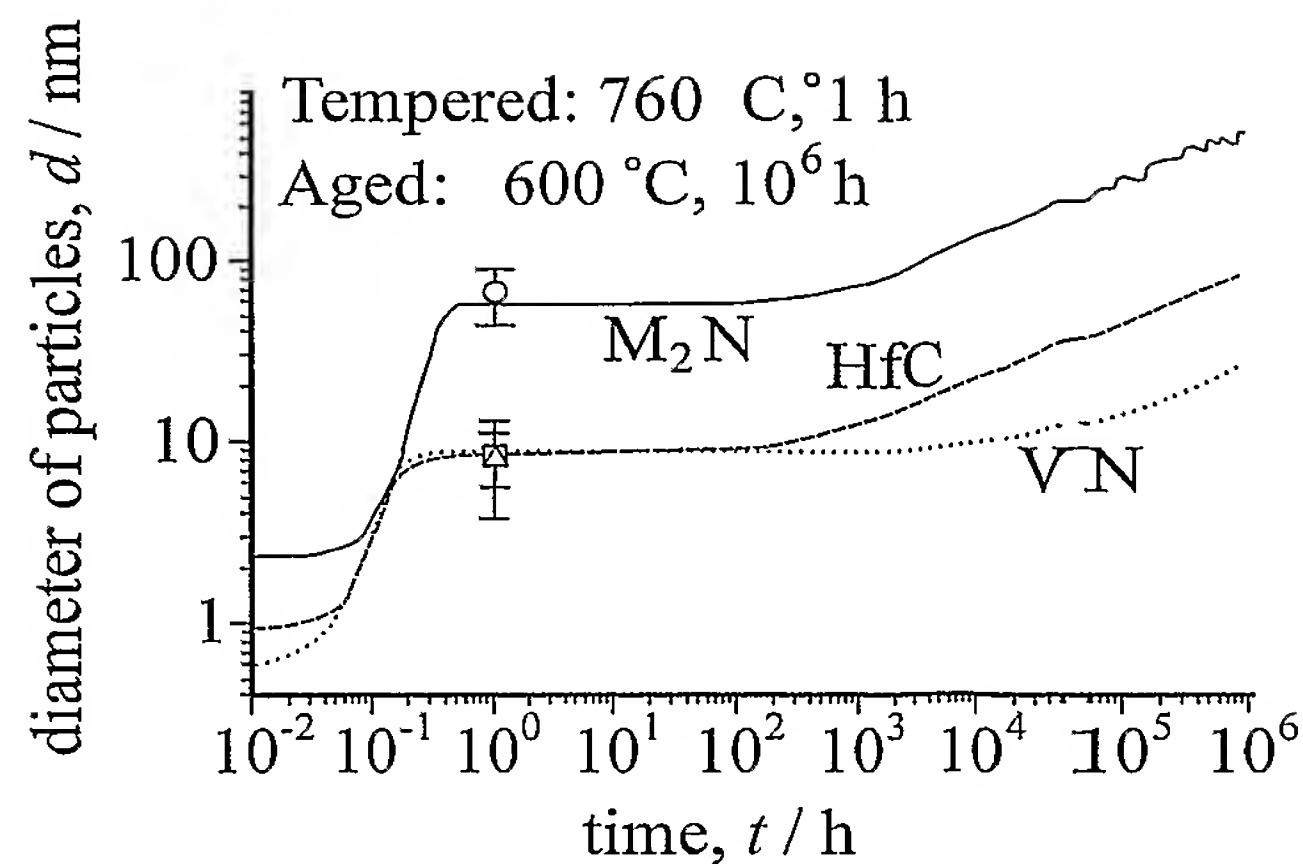


Fig. 14

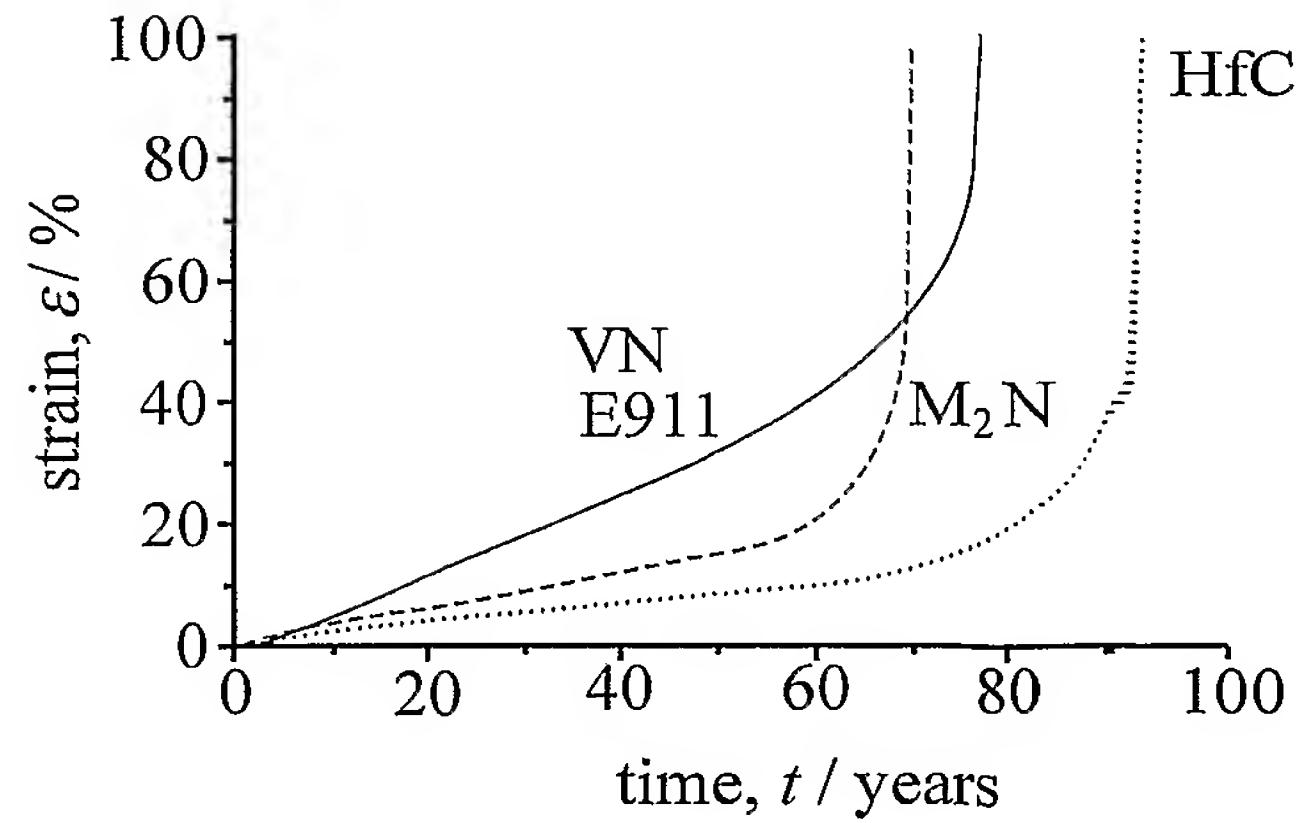


Fig. 15